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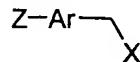
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We claim:

1. A compound represented by general structure 50:



50

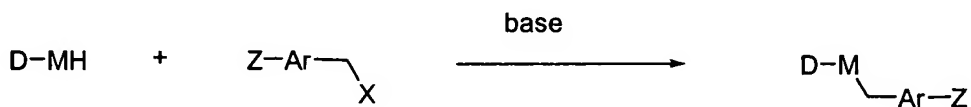
wherein

X represents Cl, Br, I, OTf, OTs, ONf, OMs;

Z represents Cl, Br, or I; and

Ar represents an optionally substituted monocyclic or polycyclic aryl or heteroaryl group, wherein CH_2X and Z are bonded to the same aromatic ring of Ar.

2. The compound of claim 1, wherein Ar represents optionally substituted phenyl.
3. The compound of claim 1, wherein X represents Cl or Br.
4. The compound of claim 1, wherein Z represents Cl or Br.
5. The compound of claim 1, wherein Ar represents optionally substituted phenyl; and X represents Cl or Br.
6. The compound of claim 1, wherein Ar represents optionally substituted phenyl; and Z represents Cl or Br.
7. The compound of claim 1, wherein Ar represents optionally substituted phenyl; X represents Cl or Br; and Z represents Cl or Br.
8. A method of protecting a functional group as depicted in Scheme 51:



Scheme 51

wherein

X represents Cl, Br, I, OTf, OTs, ONf, OMs;

Z represents Cl, Br, or I;

Ar represents an optionally substituted monocyclic or polycyclic aryl or heteroaryl group, wherein CH_2X and Z are bonded to the same aromatic ring of Ar;

M represents O, S, or NR;

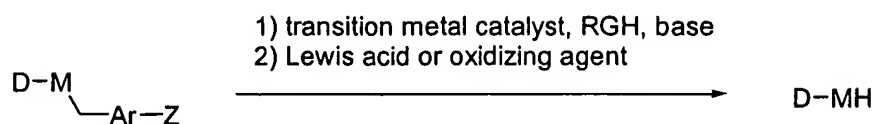
R represents independently for each occurrence H, alkyl, aryl or heteroaryl;

D represents alkyl, aryl, heteroaryl, pyranosyl, furanosyl, acyl, or $(\text{RO})_2\text{P}(\text{O})^-$; and

base is absent or represents a carbonate, bicarbonate or hydride.

9. The method of claim 8, wherein M represents O.
10. The method of claim 8, wherein D represents pyranosyl, furanosyl, acyl, or $(\text{RO})_2\text{P}(\text{O})^-$.
11. The method of claim 8, wherein M represents O; and D represents pyranosyl, furanosyl, acyl, or $(\text{RO})_2\text{P}(\text{O})^-$.
12. The method of claim 8, wherein base represents a hydride.
13. The method of claim 8, wherein Ar represents optionally substituted phenyl.
14. The method of claim 8, wherein X represents Cl or Br.
15. The method of claim 8, wherein Z represents Cl or Br.
16. The method of claim 8, wherein Ar represents optionally substituted phenyl; and X represents Cl or Br.
17. The method of claim 8, wherein Ar represents optionally substituted phenyl; and Z represents Cl or Br.
18. The method of claim 8, wherein Ar represents optionally substituted phenyl; X represents Cl or Br; and Z represents Cl or Br.
19. The method of claim 8, wherein Ar represents optionally substituted phenyl; X represents Cl or Br; Z represents Cl or Br; M represents O; and D represents pyranosyl, furanosyl, acyl, or $(\text{RO})_2\text{P}(\text{O})^-$.

20. A method of deprotecting a functional group as depicted in Scheme 52:



Scheme 52

wherein

Z represents Cl, Br, or I;

Ar represents an optionally substituted monocyclic or polycyclic aryl or heteroaryl group, wherein CH₂X and Z are bonded to the same aromatic ring of Ar;

M represents O, S, or NR;

G represents O, S, or NR;

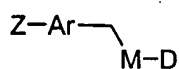
R represents independently for each occurrence H, alkyl, aryl or heteroaryl;

D represents alkyl, aryl, heteroaryl, pyranosyl, furanosyl, acyl, or (RO)₂P(O)-; and

base represents an alkoxide, amide, carbonate, or hydride.

21. The method of claim 20, wherein G represents NR.
22. The method of claim 20, wherein wherein M represents O.
23. The method of claim 20, wherein D represents pyranosyl, furanosyl, acyl, or (RO)₂P(O)-.
24. The method of claim 20, wherein Lewis acid represents a silyl triflate, zinc(II) halide, tin(IV) halide, or Ti(IV) halide; and oxidizing agents is absent.
25. The method of claim 20, wherein Lewis acid represents trimethylsilyl triflate, zinc(II) chloride, tin(IV) chloride, or Ti(IV) chloride; and oxidizing agent is absent.
26. The method of claim 20, wherein oxidizing agent represents DDQ or CAN; and Lewis acid is absent.
27. The method of claim 20, wherein G represents NR; and M represents O.
28. The method of claim 20, wherein G represents NR; M represents O; and D represents pyranosyl, furanosyl, acyl, or (RO)₂P(O)-.

29. The method of claim 20, wherein G represents NR; M represents O; D represents pyranosyl, furanosyl, acyl, or (RO)₂P(O)-; Lewis acid represents a silyl triflate, zinc(II) halide, tin(IV) halide, or Ti(IV) halide; and oxidizing agents is absent.
30. The method of claim 20, wherein G represents NR; M represents O; D represents pyranosyl, furanosyl, acyl, or (RO)₂P(O)-; Lewis acid represents trimethylsilyl triflate, zinc(II) chloride, tin(IV) chloride, or Ti(IV) chloride; and oxidizing agent is absent.
31. The method of claim 20, wherein G represents NR; M represents O; D represents pyranosyl, furanosyl, acyl, or (RO)₂P(O)-; oxidizing agent represents DDQ or CAN; and Lewis acid is absent.
32. A compound represented by general structure 53:



53

wherein

D represents alkyl, aryl, heteroaryl, pyranosyl, furanosyl, acyl, or (RO)₂P(O);

M represents O, S, or NR;

Z represents Cl, Br, or I; and

Ar represents an optionally substituted monocyclic or polycyclic aryl or heteroaryl group, wherein CH₂X and Z are bonded to the same aromatic ring of Ar.

33. The compound of claim 32, wherein Ar represents optionally substituted phenyl.
34. The compound of claim 32, wherein M represents O.
35. The compound of claim 32, wherein D represents pyranosyl, furanosyl, acyl, or (RO)₂P(O)-.
36. The compound of claim 32, wherein Z represents Cl or Br.
37. The compound of claim 32, wherein Ar represents optionally substituted phenyl; and Z represents Cl or Br.

38. The compound of claim 32, wherein Ar represents optionally substituted phenyl; and M represents O.
39. The compound of claim 32, wherein Ar represents optionally substituted phenyl; and D represents pyranosyl, furanosyl, acyl, or $(RO)_2P(O)-$.
40. The compound of claim 32, wherein Ar represents optionally substituted phenyl; Z represents Cl or Br; and M represents O.
41. The compound of claim 32, wherein Ar represents optionally substituted phenyl; Z represents Cl or Br; M represents O; and D represents pyranosyl, furanosyl, acyl, or $(RO)_2P(O)-$.